The AEF Process: The Key to Crisis Response?

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This paper examines the Air Force's Air Expeditionary Force (AEF) process and how it has improved the Air Force's ability to present capabilities to the combatant commands. This paper examines the capabilities presented by the Air Force in DESERT SHIELD as an example of force generation without the AEF process. It also examines the capabilities presented through the AEF process in a hypothetical regional conventional crisis. This comparative analysis utilizes the joint functions described in *Joint Publication 3-0*.

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Abstract

The AEF Process: The Key to Crisis Response? by Lt Col Matthew J Lengel, USAF, 45 pages.

Following the Cold War, the United States reduced the size of its military. Much of the remaining force became home-based in the United States. The downsized Air Force had remained continually engaged in combat operations since 1991. In an effort to manage the operations tempo for Airmen and critical Air Force equipment, the Air Force implemented the Air Expeditionary Force (AEF) process. This process helped to better utilize the Air Force's limited assets while meeting the requirements of the Geographic Combatant Commands (GCC). Each AEF force package possesses capabilities to perform across the full spectrum of military operations.

The AEF process enables the Air Force to present forces to a GCC rapidly in times of crisis. This paper examines how the AEF process improves the capabilities that the Air Force deploys to a crisis. To accomplish this, the paper performs a comparative analysis of crisis response with and without using the AEF process. Operation DESERT SHIELD provides an example of the Air Force's response to a crisis without the AEF. This historic case study is compared to a hypothetical response to a similar regional conventional crisis that utilizes the AEF process. This case study utilizes the joint functions—command and control, intelligence, movement and maneuver, fires, protection and sustainment—to analyze the Air Force's capabilities in these scenarios.

This paper analyzes shortfalls in Air Force capabilities during the deployment to DESERT SHIELD. While many of those shortfalls have been corrected, these improvements cannot all be attributed to the implementation of the AEF process. Some of these improvements were a result of doctrinal changes and organizational improvements. Even though the AEF process does not improve the Air Force's capabilities in a crisis response, it does continue to be a effective force management tool that improves the utilization and availability of Air Force capabilities while providing airpower rapidly to respond to a crisis situation.

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Introduction

Even though the United States is currently engaged in a persistent conflict against global terrorist groups, it is possible for its vital interests to be threatened by a regional conventional crisis in the future. If this occurs, the United States must be able to respond rapidly and effectively to protect those interests. In an effort to retain this ability, the United States military has increased its training for full-spectrum operations in preparation for potential conflict of a conventional and irregular nature. The United States Air Force must be prepared to contribute critical capabilities to a joint force responding to a conventional crisis. This research paper examines how the Air Force can respond effectively and rapidly to a future regional crisis. It is proposed that the Air Force's Air Expeditionary Force (AEF) process remains a viable method to have forces prepared for future conflicts.

Following DESERT STORM and the end of the Cold War, the United States military was forced to transform its strategy for military planning and projecting power. During the Cold War, the United States based its military decisions on countering a specific threat—the Soviet Union. When the Soviet Union collapsed, numerous regional powers emerged as potential challengers to American national interests.[1] It was impossible to focus on a single regional adversary and be prepared for all of possibilities. Subsequently, a capabilities-based approach to military force planning emerged.

Additionally, force reductions and political changes reduced the United States' ability to forward-base its forces. The United States military became largely based in the continental United States and deployed its force from those locations when responding to a crisis. Additionally, the Air Force had to accomplish this transformation while it was engaged in continuous combat operations that extended back to 1991. The strain of these operations on Air Force personnel and

[1] Daniel Byman, Matthew Waxman and Eric Larson, *Air Power as a Coercive Instrument* (Santa Monica, CA: RAND, 1999), 2.

equipment forced a change in how the service used its forces in an effort to sustain an acceptable quality of life for its people and preserve the service life of its weapon systems.

The Air Expeditionary Force (AEF) concept is the Air Force's capabilities-based approach to force generation. It is a process for organizing, training, deploying, redeploying, and reconstituting Air Force personnel and units. The AEF process attempts to prepare a more effective force that can be rapidly deployed to a crisis location and meet the Geographic Combatant Commander's (GCC) requirements. This process is designed to better utilize Air Force assets to meet its recurring taskings while having forces continuously available to respond to a crisis. In order to be effective, the initial response force must be able to present a credible deterrent to the potential adversary, which means the Air Force must present a force that can deny the enemy its strengths. This deterrence allows additional time for political negotiations, as well as the deployment of military forces. To demonstrate the value of this approach, a comparison of the Air Force's response to crises with and without the AEF process is required. This comparison is performed in terms of capabilities and vulnerabilities provided by the Air Force in case studies about Operation DESERT SHIELD and a similar hypothetical current day scenario. *Joint Publication (JP) 3-0: Joint Operations* describes six joint functions, each of which are groups of related capabilities grouped together to better organize joint operations. These joint functions help to assess the strengths and weaknesses of both force generation approaches.

Over the past decade, contingency operations forced modifications to the original AEF process; although, it continues to be the basis for the Air Force approach to force generation and facilitates the preparation of forces to respond to a future crisis along the full spectrum of military operations. This monograph describes how the AEF process assists the Air Force's contributions to a joint task force, and examines ways to integrate the joint force and Air Force capabilities to provide a more effective initial response force.

Joint Functions

JP 3-0: Joint Operations defines joint functions as "related capabilities and activities grouped together to help [joint force commanders] JFCs integrate, synchronize, and direct joint operations."[2] The six joint functions are command and control, intelligence, fires, sustainment, movement and maneuver, and protection. These groupings provide commanders a method to organize and assess military forces, both friendly and enemy. Staffs analyze force capabilities in terms of these functions in order to discern their strengths and weaknesses. Each service of the joint force contributes to aspects of these functions. While these functions are sometimes called "warfighting functions," they apply to actions throughout the full-spectrum of operations to include actions short of war.

Command and control (C2) is the exercise of authority and direction by a commander over assigned and attached forces in the accomplishment of the mission.[3] It entails not only a commander's authority but also the ability to direct those forces. This function also encompasses the commander's staff and equipment to communicate intent and orders. Command and control also includes the command relationships between echelons and supporting organizations. There are various methods of accomplishing C2 that range from issuing subordinates detailed instructions to providing only general guidance that allow subordinates flexibility to operate. Effective command and control relies on information about the operating environment. The *intelligence* joint function focuses on providing the commander and organization with an understanding of the operational environment.[4] It involves collecting and analyzing information

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[2] U.S. Department of Defense, *Joint Publication 3-0: Joint Operations* (Suffolk, VA: U.S. Joint Forces Command, 2010), III-1.

[3] Ibid.

[4] Ibid., III-16.

about the operating environment to include enemy and friendly forces. Intelligence is critical to a military organization because it forms the basis for commanders' decisions during an operation.

Commanders' decisions often involve the movement of forces. *Movement and maneuver* is defined as the placement of forces to secure positional advantages and exploit tactical success in order achieve operational and strategic objectives.[5] The purpose of maneuver is to place the enemy at a disadvantage by applying movement and fires in order to render the enemy incapable of resisting friendly efforts.[6] The *fires* function is defined as the use of weapons to create lethal and nonlethal effects.[7] While some aspects of fires are lethal, there are also nonlethal elements such as information operations and electronic warfare. Fires can serve as a supporting effort when it facilitates the maneuver of friendly forces.[8] It could also serve as the main effort as was the case in aerial attack campaign during Operation ALLIED FORCE. Fires in conjunction with movement and maneuver contribute to the defeat of enemy, but friendly forces must remain shielded from enemy action and preserve the necessary materials to accomplish their objectives.

As the name implies, the *protection* function focuses on defending the joint force's capabilities from enemy effects.[9] Protection involves active as well as passive measures for security and defense, and includes consequence management in the event of a successful enemy attack. Protection extends the longevity of friendly assets, is not limited to friendly military forces, and includes defending noncombatants. This function can also extend to friendly nations' critical infrastructure because it may be important to the *sustainment* of the joint force. The

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[5] Ibid., III-22.

[6] Ibid.

[7] Ibid., III-17.

[8] U.S. Department of the Army, *Field Manual (FM) 3-0: Operations* (Washington, DC: Department of the Army, 2008), 4-4.

[9] *JP 3-0: Joint Operations*, III-24.

sustainment function is the provision of services and materials necessary to maintain operations.[10] This function permits the friendly force freedom of action and extends the force's operational reach.[11] Sustainment is largely associated with logistics and the movement of supplies, such as ammunition and equipment. It also includes providing medical services, food, and water.[12] Another critical aspect of sustainment is performing maintenance of equipment to include combat vehicles and weapons. While the protection and sustainment joint functions may not make direct contact with the enemy, their absence can allow an enemy to successfully achieve its objectives.

American joint publications describe these six joint functions, but each of the services applies them differently. For example, the United States Army refers to these functions as "warfighting functions," while the joint publications refer to these functions as applicable to the full spectrum of operations.[13] These functions are a common focal point for the Army throughout its Military Decision Making Process (MDMP).[14] Staff estimates and commander's guidance often utilize these functions.[15] The Army associates these functions directly with its various branches, for example *maneuver* is linked to the infantry, aviation, and armor branches while *fires* is tied closely with artillery branch. While these associations exist, the Army acknowledges that some branches contribute to the support of multiple warfighting functions.[16] For example, an infantry unit may be tasked to provide security for an area in order to protect assets. The Army's unique application of these functions has the potential to carry over to joint organizations where the Army has a leadership role.

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[10] Ibid., III-30.

[11] Ibid.

[12] Ibid., III-31.

[13] *FM 3-0: Operations*, 4-3.

[14] U.S. Department of the Army, *Field Manual 5-0: The Operational Process* (Washington, DC: Department of the Army, 2010), 1-12.

[15] Ibid., D-2.

[16] *FM 3-0: Operations*, 4-7.

The Air Force's doctrinal concept of "functions" differs from joint doctrine. To the Air Force, "operational functions" are tasks that airpower can perform such as counterair, counterland, command and control, strategic attack, and airlift.[17] By defining its own set of functions and not attempting to relate them to doctrinal joint functions, the Air Force creates the potential for miscommunication and misunderstanding with other services. While Airmen understand their service-unique doctrinal terms such as counterland, these terms are not defined in joint doctrine and do not enhance the joint force's overall understanding. The Air Force's "functions" are not without value, but their limitations must be acknowledged. The Air Force's missions are not usually clearly described by a single joint function due to the nature of air domain operations. One flown by an Air Force aircraft can simultaneously contribute to multiple joint functions.

For example, the ATO directs an aircrew to fly an F-15E to strike an enemy target. For this mission the aircraft is loaded with air-to-air and air-to-ground munitions. The aircrew flies into enemy territory to a position where they can attack the target (the joint function of movement and maneuver), employs their weapons against the target (fires), and leave the target area. During the egress, this aircrew is retasked to support a personnel recovery mission by escorting a rescue helicopter during its infiltration. The F-15E aircrew uses sensors to observe enemy activity along the infiltration route and passes it to the rescue mission commander (intelligence) to assist in decisions for the mission. During this escort tasking, an enemy aircraft threatens the rescue operation. The F-15E aircrew engages that aircraft and shoots it down so the rescue mission can continue (protection). Scenarios similar to this have occurred in combat and are common in Air Force training exercises. This example is not meant to claim that the Air Force has the capability to accomplish all things. It is intended to show how a single mission in the air domain can span

[17] U.S. Department of the Air Force, *Air Force Doctrine Document (AFDD) 3-1: Air Warfare*, (Maxwell AFB, AL: Air Force Doctrine Center, 2010), 5.

across multiple joint functions. A joint force commander can leverage this flexibility in the early stages of a crisis response while the friendly force is small and still building its capacity. A challenge for the Air Force is to describe and plan for these actions in terms of functions understood by the entire joint force.

While the Air Force's "functions" give a degree of expediency, the Air Force must convey its capabilities to the rest of the joint force with joint terminology. By not utilizing joint terminology in its own service doctrine, the Air Force is vulnerable to misunderstanding by non-Airmen. Potentially worse is the categorization of airpower into a single joint function, such as fires, since this could lead to a failure to leverage airpower's full capacity while planning in a crisis situation. In spite of this doctrinal gap between joint and Air Force service doctrine, this paper utilizes the joint functions to describe the Air Force's capabilities as a result of the AEF process. The joint functions in this paper are discussed from an Airman's perspective. This may provide a slightly different approach from the Sister Services. The underlying importance of this method is to convey the Air Force's capabilities to the joint force as a result of the AEF process.

Cold War Approach to Crisis Response

During the Cold War, the United States developed its military strategy using a threat-based approach that was focused on the global containment of the Soviet Union.[18] The United States considered the Soviet Union to be its most dangerous and most likely threat, and influenced U.S. decisions on how the military was trained and organized. During conflicts such as the Korean and Vietnam Wars, American policymakers and military leadership remained focused on maintaining sufficient forces in other theaters such as Western Europe.[19] Using a threat-based

[18] Eric Larson, "U.S. Reform in a Decade of Change," *Post-Cold War Defense Reform*, ed. Istvan Gyarmati and Theodor Winkler (Washington, DC: Brassey's, 2002), 248.

[19] James Schnabel, *Policy and Direction in the First Year* (Washington, DC: Center for Military History, 1992), 223.

military strategy, the United States accepted risk in its ability to prepare for conflict against other adversaries in other locations as a mechanism to prepare for the primary threat.

This threat-based approach influenced U.S. military doctrine and training, which was oriented to counter the Soviet military. Even though they were published in service doctrine documents, defensive concepts such as "active defense" and "AirLand Battle" were designed specifically to guide the Army, and eventually an Army-Air Force team, to counter an invasion of Western Europe by the Soviet Union.[20] These concepts were not intended to counter any other adversary but the Soviet Union – an equivalent concept was not developed in regards to other potential adversaries. [21] When the United States fought during the Cold War, it eventually reached a point where its Soviet-based doctrinal concepts were of limited utility. Even though some of the United States' adversaries used equipment from the Soviet Union, those forces were organized and employed differently, and reduced the effectiveness of U.S. threat-based doctrine.

Similar to its doctrine, the United States military's tactical training was also threat-based. Its attempt to counter Soviet doctrine and tactics determined which tasks the U.S. Army trained. The United States participated in multilateral exercises with its allies around the world in an effort to prepare for a conflict with the Soviet Union. These exercises were conducted to train and synchronize efforts with allied militaries, in order to deter Soviet aggression in that region. The threat-based approach demonstrated the use of "aggressor" units whose full-time mission was to replicate Soviet forces by employing Soviet doctrine and equipment.[22] The United States Army and Air Force trained against these "adversary" forces at home-station and capstone-level training

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[20] John Romjue, *American Army Doctrine for the Post-Cold War* (Fort Monroe, VA: Military History Office, 1997), 27.

[21] Richard M. Swain, "Filling the Void: The Operational Art and the U.S. Army," in *Operational Art: Developments in the Theories of War*, ed. B.J.C. McKercher and Michael Hennessy (Fort Leavenworth, KS: Combined Arms College, 1998), 149.

[22] Ronald Rusing, "Prepare the Fighter Force - Red Flag/Composite Force" (master's thesis, Command and General Staff College, 1980), 12.

events, such as the Army's National Center and the Air Force's Red Flag exercise.[23] This training allowed the American military to develop, validate, and practice its own doctrine and tactics while "fighting" these OPFOR training units.

The United States anticipated a major conflict with the Soviet Union and its Warsaw Pact allies, likely on a European battlefield.[24] In its threat-based approach, the United States continuously analyzed the Soviet Union's force disposition in order to make decisions on how to base American forces. Alliances like the North Atlantic Treaty Organization (NATO) emerged in efforts to provide a collective defense against this threat. The United States met some of its commitments to its allies by basing forces in those nations, many of which were in or near regions of potential conflict. These forward bases were primarily intended to be a deterrent to Soviet aggression. At the end of the Cold War, the Air Force had 40 forward bases throughout the world, which reduced the response time to a potential crisis as these units were constructed to counter specific Soviet capabilities. [25] In the event deterrence failed, these forward forces were America's "initial response force." The U.S. assumed that if the Soviet Union invaded Western Europe, it would have the operational initiative but American forces would immediately contest it.[26]

The Soviet Union would initially outnumber the United States and its allies during an invasion. American Cold War doctrine and plans were designed to delay the larger Soviet invasion force. This delay would help to attrite Soviet forces and allow time for the United States

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[23] Ibid., 13.

[24] U.S. Department of the Air Force, *Air Force Doctrine Document 1: Air Force Basic Doctrine* (Maxwell AFB, AL: Air Force Doctrine Center, 2003), 59.

[25] Richard Davis, *Anatomy of Reform: The Expeditionary Aerospace Force* (Washington, DC: Air Force History and Museum Program, 2003), 14.

[26] Dennis Drew and Donald Snow, *Making Strategy: An Introduction to National Security Processes and Problems* (Maxwell Air Force Base, Alabama: Air University Press, 1988), 88.

to deploy additional forces from stateside bases to assist with future operations.[27] Prepositioned logistic stockpiles and host-nation support would sustain these initial forces. Arriving units would utilize equipment and vehicles that were prepositioned in the European Theater. By reducing sustainment and deployment requirements the American military logistical system could deploy needed reinforcements.[28] The United States could use this force generation approach as long as a crisis occurred where the forces and equipment were located.

Towards the end of the Cold War, the United States intervened in smaller crises like Operation JUST CAUSE in Panama, while it also prepared for a major conventional conflict against the Soviet Union. Similar to a potential European conflict, the combat force and support structure for Operation JUST CAUSE came from an existing American military infrastructure with Army, Navy, and Air Force bases located in Panama.[29] In the months prior to the December 1989 invasion, the United States built up its military force in Panama – more than 4,000 military personnel deployed to the country prior to the initiation of the operation.[30] This buildup time allowed the United States time to prepare and equip for the operation. As the invading force, the United States took the operational initiative, which allowed the U.S. military planners to determine the time and location of engagements to anticipate possible issues, and to set the conditions for success. These preparatory efforts helped the American military to quickly overpower the Panamanian Defense Force.[31] This planning also simplified the operational problem and left the United States' Cold War force generation approach largely unchallenged.

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[27] *AFDD 1: Air Force Basic Doctrine*, 59.

[28] Glenn Kent, "Relevance of High-Intensity Operations." in *The Future of Air Power in the Aftermath of the Gulf War*, ed. Richard H. Shultz and Robert Pfaltzgraff, (Maxwell Air Force Base, Alabama: Air University Press, 1998), 127.

[29] Lawrence Yates. *The U.S. Military Intervention in Panama* (Washington, DC: Center for Military History, 2008), 182.

[30] Ibid.

[31] Ibid., 277.

On the eve of the Soviet Union's collapse, the United States faced its first post-Cold War conflict as Iraq invaded its neighbor, Kuwait. The United States deployed forces to defend its ally, Saudi Arabia, from possible Iraqi aggression during Operation DESERT SHIELD. American Cold War doctrine, tactics, equipment, and organization were finally tested. While this conflict is commonly extolled as a validation of the United States' Cold War planning, the initial response to this crisis deserves further examination in order to understand how to better prepare for future conflicts. This monograph turns its focus to the lessons of this case study.

Case Study: Operation DESERT SHIELD

On 2 August 1990, Iraq invaded Kuwait and claimed that its actions were an attempt to resolve a dispute over territory that contained large amounts of oil. It is likely that Iraq pursued these resources in an attempt to reduce its debt following the war against Iran. Angered about Kuwait's oil production policies, Iraq accused Kuwait of stealing more than 2.5 billion barrels of oil by drilling under Iraq's oil fields.[32] It also accused Kuwait of violating the crude production quotas agreed upon with other oil producing nations, which kept oil prices artificially low.[33] Low oil prices made it difficult for Iraq to recover from the $80 billion of debt incurred by the Iranian conflict – much of which was owed to Kuwait, who refused to forgive.[34]

Iraq anticipated that an invasion would create a small international protest, but it failed to anticipate the global implications of its actions. Iraq's leadership considered its issues with Kuwait a largely internal matter.[35] There was international concern that if Iraq consolidated its gains in Kuwait, then it would continue on to seize the oil fields in eastern Saudi Arabia. There

[32] Joe Stork and Ann Lesch, "Background to the Crisis: Why War?" *Middle East Report* 167 (November–December 1990): 12.

[33] Lily Hindy, "Interrogator: Invasion Surprised Saddam," *The Boston Globe*, January 25, 2008.

[34] T. Dugdale-Pointon, "Iran-Iraq War 1980-1988," http://www.historyofwar.org/articles/wars_iraniraq.html [accessed 2 December 2010].

[35] Eliot Cohen and Thomas A. Keaney, *Gulf War Air Power Survey* (Washington, DC: Department of the Air Force, 1993), 11.

were also increased concerns over Iraq's continued access to the region's petroleum resources. In its war with Iran, Iraq attempted to coerce other nations by denying access to critical natural resources.

From 1984 to 1988, Iraq and Iran engaged in a phase of their conflict commonly known as the "Tanker War," in which both nations attempted to impede the other's ability to provide oil to the international market. Because oil revenues funded war efforts, both nations attacked the other's oil production capacity and obstructed shipping lanes with warships, aircraft, and sea mines. A cooperative intervention between Iraq, Saudi Arabia, and the United States eventually resolved these attempts. These events demonstrated the Middle East potential to impose economic damage on an adversary, and fueled concerns about the safe shipment of a critical portion of the world's oil supply out of the Gulf Region and into the international market. [36]

King Fahd of Saudi Arabia requested that the United States deploy forces to his nation to assist in defending against a possible Iraqi attack.[37] During the initial stages of the Operation DESERT SHIELD deployment, the Iraqi military had the operational initiative. As defined in the United States Army's *FM 3-0*, operational initiative is the ability to set or dictate the terms of action in a battle or operation.[38] Possessing this initiative allows a commander to determine the time, location, tempo, and nature of a conflict. In order to wrest the operational initiative from the Iraqi military, the Coalition forces had to initiate offensive operations or deter Iraq from using the initiative it had.

Based on recommended force ratios in *FM 3-0*, a single light infantry brigade is unable to conduct offensive operations against an Iraqi force consisting of an armor division and a

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[36] T. Dugdale-Pointon, "Tanker War 1984-1988," http://www.historyofwar.org/articles/wars_tanker.html [accessed 2 December 2010].

[37] Williamson Murray, *Air Power in the Persian Gulf* (Baltimore, MD: The Nautical & Aviation Publishing Company of America, 1995), 10.

[38] *FM 3-0: Operations*, 1-100.

mechanized infantry division. These same calculations show that the initial American forces are unable to successfully defend an invasion by this force.[39] Based on this analysis, the American forces initially deployed to DESERT SHIELD were vulnerable to an Iraqi attack, a fact that concerned American military leadership.[40] In an attempt to avoid potentially unsuccessful combat operations during the early phases of DESERT SHIELD, deterrence was the objective of the initial American forces.[41] Deterrence was not intended be an overall strategy but simply a method to set the conditions for future success as it permitted time for political negotiations to continue while additional combat forces arrived into theater. [42]

Current doctrine promotes the use of initial deterrence in a common phasing model for arrange an operation. This model (figure 1) describes the common phases of an operation. Phase II of this model is titled "Seize Initiative."[43]

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[39] U.S. Department of Defense, *Conduct of the Persian Gulf War: Final Report to Congress*, (Washington, DC: Department of Defense, 1992), 37. *FM 3-0* recommends having a 3:1 ratio when conducting an attack against a prepared defense, which is what the Iraqi Army eventually established within Kuwait. The equivalent force ratio of American to Iraqi ground forces during the first three weeks of DESERT SHIELD could be estimated as initially 1:6 and eventually achieving almost 1:1. Iraq's land forces were initially more survivable than the lighter units first deployed by the US Army. These calculations do not take into account the effect of airpower capabilities on these force ratios.

[40] Bob Woodward, *The Commanders* (New York: Simon & Schuster, 1991), 257.

[41] Stephen Cimbala, *Military Persuasion: Deterrence and Provocation in Crisis and War* (College Park, PA: Penn State Press, 1994), 169.

[42] Robert Dorff and Joseph R. Cerami, "Deterrence and Competitive Strategies: a New Look at an Old Concept," in *Deterrence in the 21st Century* ed. Max Manwaring, (Portland, OR: Frank Cass, 2001), 116; Cimbala, *Military Persuasion*, 169.

[43] *JP 3-0: Joint Operations*, III-31.

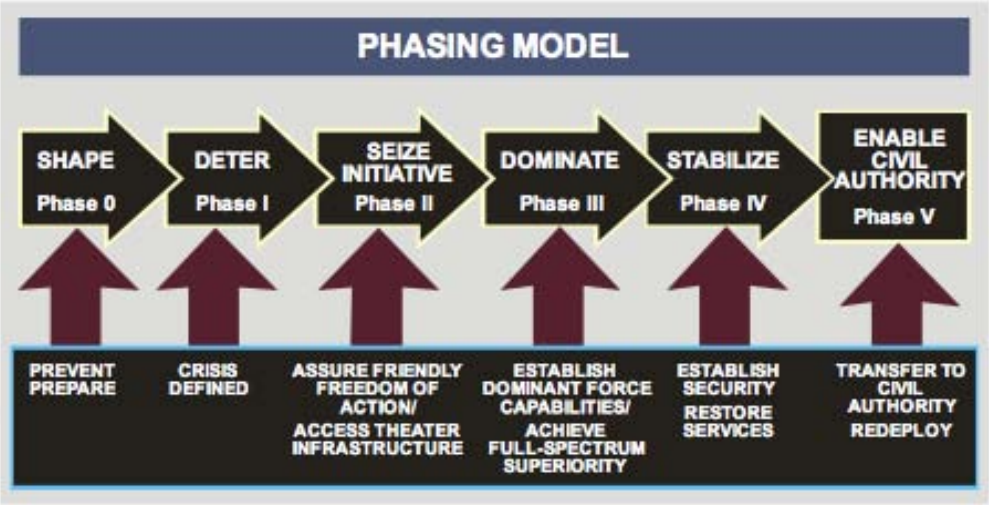

Figure 1: Phasing Model depicted in JP 3-0[44]

An overview of deterrence theory provides an understanding of the initial force's deterrent credibility. *Deterrence* is the effect when an actor does not take an action it otherwise would have because of a belief that intolerable consequences would ensue.[45] It is an attempt to influence how an enemy thinks or acts.[46] Deterrence is predominately generated by two approaches: punishment and denial.[47] These two methods are not exclusive and can be used in conjunction with each other. Punishment is the threat of punitive action as a response to an action. The goal in this deterrence approach is to give adversary decision makers a threat that the costs of their actions will exceed any benefits gained.[48] The punitive actions carried out against an adversary's military targets or other targets of value will likely occur after the United States' national interests have been threatened. This approach assumes that the defender and adversary both understand the

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[44] Ibid., III-31.

[45] Colin Gray, "Deterrence and the Nature of Strategy," *Deterrence in the 21st Century*, ed. Max Manwaring (Portland, OR: Frank Cass, 2001), 18.

[46] Michael Carns, "Reopening the Deterrence Debate: Thinking about a Peaceful and Prosperous Tomorrow," in *Deterrence in the 21st Century*, ed. Max Manwaring (Portland, OR: Frank Cass, 2001), 9.

[47] Dorff, "Deterrence and Competitive Strategies: a New Look at an Old Concept," 113.

[48] Keith Payne and Dale Watson, "Deterrence in the Post-Cold War World," *Strategy in the Contemporary World*, ed. John Baylis, James Wirtz and Colin Gray, (New York, NY: Oxford Press, 2010), 161.

adversary's value of his goals and resources.[49] The difficulty is that the aggressor may not know, appreciate, or place value in the costs that will be exacted during a retaliatory attack. An aggressor undeterred by punishment risks the potential reprisal and pursues their political goals, thus threatening the United States' interests. Attempts to deter through punishment require a force capable of taking punitive action. During the first three weeks of DESERT SHEILD, Coalition forces in Saudi Arabia did not have the capabilities necessary to defend, much less conduct punitive operations. Outside forces accomplished any necessary punitive actions. If punishment was unsuccessful, either due to improper execution or analysis, then the impetus for the escalation of future hostilities was in motion.

An alternative to punishment is denial or deterrence by reducing an aggressor's ability to achieve its intended goals.[50] The intent of this method is for the aggressor to perceive how it might be unsuccessful in its attempt to achieve its goals, which results in the adversary expending its limited political and physical resources without gaining its desired benefit.[51] In order for this method of deterrence to work, the aggressor must understand that it will be unsuccessful in achieving its goals. If not, then the aggressor remains undeterred. Unlike the punishment approach, a defender could stop an undeterred aggressor from achieving its desired goals and keep its security interests preserved. The defender does not have to pay the "costs" of recovering the initial loss of a strategic interest.[52] To effectively deny an adversary, an initial response force must have the capability to blunt the aggressor's strengths that would prove critical in an attempt to achieve its objectives.

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[49] Elli Lieberman, *Deterrence Theory: Success or Failure in Arab-Israeli Wars* (Washington, DC: National Defense University, 1995), 8.

[50] Payne, "Deterrence in the Post-Cold War World," 162.

[51] Byman, *Air Power as a Coercive Instrument*, 21.

[52] Dorff, "Deterrence and Competitive Strategies: a New Look at an Old Concept," 122.

DESERT SHIELD Force Deployment

During DESERT SHIELD, the United States broke from its Cold War approach to force generation. Central Command (CENTCOM) did not have the forward-based forces to utilize in the initial response to this regional crisis.[53] Military planners deployed combat units to the theater rapidly, and the initial Air Force units deployed as part of Operation DESERT SHIELD were home-stationed in the United States and as part of Central Command Air Force's (CENTAF) peacetime command, Ninth Air Force.[54]

Without an established *joint* response force generation process, the Air Force and other services deployed units that arrived in minimum time. Deterrence relied more on the political message conveyed by the rapid force deployment than the actual capabilities of those initial forces. The arrival of aircraft and ships to the area within hours enhanced the deterrence effort and demonstrated the United States political resolve.[55] While there was some value in this method, there was a risk that the Iraqi leadership may not have been swayed by this political message. The initial deployment of American forces was not based on countering the capabilities of a potential Iraqi invasion force.

Had Iraq invaded Saudi Arabia, the assumption was that it would have been similar to the invasion of Kuwait. Iraq's armored and infantry units would have to spearhead the invasion, possibly supported by an air assault. Iraq would have attempted to gain local air superiority by using its fighter aircraft and air defense systems. While Iraqi aircraft could have inflicted some damage on Coalition forces, Iraqi ground forces would have been responsible for decisive action during an invasion. In order to effectively deter this aggression, the United States needed its

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[53] Murray, *Air Power in the Persian Gulf*, 13.

[54] Lawrence Freedman and Efraim Karsh, *The Gulf Conflict 1990-1991: Diplomacy and War in the New World Order* (Princeton, NJ: Princeton University Press, 1993), 85.

[55] Richard Swain, *Lucky War* (Fort Leavenworth, KS: Combat Studies Institute, 1994), 8.

capabilities to deny Iraq the ability to achieve its objectives. American forces had to counter Iraq's ground forces.

Because of its reliance on Cold War deployment planning, the United States did not initially deploy an effective deterrence force to Saudi Arabia. CENTCOM's request was to deploy forces to the region immediately without a clear determination of what capabilities were needed.[56] Had CENTCOM clearly stated its force requirements, the Air Force lacked a process to provide a continuous supply of forces and was not prepared to meet a combatant commander's requirements in a contingency. The Air Force, along with the Army, was focused on sending combat forces to Saudi Arabia as quickly as possible without full consideration of their capabilities.[57]

The joint functions can be used to analyze and understand the Air Force's capabilities. This analysis focuses on the initial deployment of forces during the first three weeks of DESERT SHIELD. Iraq possessed the operational initiative until it constructed defensive barriers three weeks into DESERT SHIELD.[58] Until this time, there was no clear indication that Iraq would not invade, so the American leadership made plans to deter and prevent the invasion it from occurring. When it committed to a defensive position, Iraq yielded the operational initiative to the Coalition force. A conflict began if the Coalition forces initiated an attack, and until this time, an Iraqi invasion of Saudi Arabia was possible. It is not the intent of this monograph to debate Iraq's intent to invade Saudi Arabia or to debate the success of the Coalition's deterrence effort. The purpose is to analyze the Air Force's force generation methodology in DESERT SHIELD and to assess for any areas of improvement.

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[56] Freedman, *The Gulf Conflict 1990-1991*, 85.

[57] *Conduct of the Persian Gulf War: Final Report to Congress*, 34.

[58] Swain, *Lucky War*, 52.

Air Force Contributions to Joint Functions

This paper focuses on the Air Force units that deployed through the end of August 1990. The case study describes the joint force's challenges during this period in terms of the functions described in current joint doctrine. It analyzes the Air Force's ability to contribute to the joint force and resolve these challenges. Specifically, this study examines the joint force's vulnerabilities and how gaps in service capabilities contributed to these vulnerabilities. During this time, the Iraqi military outnumbered Coalition forces, and U.S. units had limited ability to maneuver in the face of an enemy armored attack.[59] These units' task was to defend the critical port and airfield facilities in Eastern Province of Saudi Arabia.[60] American forces were hampered by a lack of anti-armor weapons to counter a large-scale Iraqi invasion.[61] Additionally, American ground forces suffered from logistical issues such as food and water shortages. Improvised support from Saudi Arabia overcame these issues.[62]

Command and Control

Command and control of this initial response force was limited. The first Air Force squadrons to arrive in theater did not receive much guidance from the CENTAF planners. When those squadrons arrived, there was not a centralized air command and control organization. The initial Air Force combat units were based in Dhahran, almost 250 miles away from the CENTAF planners in Riyadh. There was no system in place to collect information about the Iraqi military or to rapidly direct Air Force aircraft. The predecessor to the current Air Operations Center (AOC) was then known as the Theater Air Command and Control Center (TACC). This

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[59] Bob Woodward, *The Commanders* (New York: Simon & Schuster, 1991), 268.

[60] *Conduct of the Persian Gulf War: Final Report to Congress*, 36.

[61] Richard Kugler, *Case Study in Army Transformations: Creating Modular Forces* (Washington, DC: Center for Technology and National Security Policy, 2008), 7.

[62] *Conduct of the Persian Gulf War: Final Report to Congress*, 35.

organization did not arrive until ten days into the deployment.[63] Airborne early warning aircraft and ground radar stations performed initial command and control functions for Air Force units. These systems served as the conduit between CENTAF planners and deployed tactical units.

During DESERT SHIELD, the CENTAF commander was designated as the Joint Forces Air Component Commander (JFACC). The JFACC had tactical control (TACON) of all Air Force and Navy aircraft flying over Saudi Arabia. This was the first time since World War II that this method of command and control was used.[64] While this was a joint functional command, the JFACC's staff was largely an extension of the CENTAF staff, consisting mostly of Air Force personnel.[65] The newly formed TACC included liaisons from non-Air Force members of the air component that were provided on a temporary basis.[66] The ad hoc nature of liaisons to the Air Force-dominated air component staff, were sources of friction during DESERT SHIELD.

Joint planning was further hindered by a lack of interoperability between Navy and Air Force systems. During the early stages of DESERT SHIELD when the joint force was most vulnerable, the Air Force and TACC could not transmit the daily air tasking orders (ATO) to the Navy.[67] The air component's processes had to be modified to overcome these issues so as to not hinder air operations. If the air component had to increase its operational tempo to counter an Iraqi invasion, these strained processes would have decreased the Air Force's contribution to the joint force.

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[63] RAND, *Project Air Force Assessment of Operation Desert Shield: The Buildup of Combat Power* (Santa Monica, CA: RAND, 1994), 10.

[64] Mark Mandeles, Thomas Hone, and Sanford Terry, *Managing "Command and Control" in the Persian Gulf War* (Westport, CT: Praeger, 1996), 4.

[65] James Winnefeld, and Dana Johnson, *Joint Air Operations: Pursuit of Unity in Command and Control 1942-1991* (Annapolis, MD: Naval Institute Press, 1993), 127.

[66] Ibid., 111.

[67] *Conduct of the Persian Gulf War: Final Report to Congress*, 36.

During the initial deployment, the CENTCOM commander was engaged with tasks in the United States. In his absence, the CENTAF commander concurrently served as the CENTCOM Forward at the headquarters in Riyadh, Saudi Arabia, from which communications with the United States were difficult.[68] Initially there were no satellite communication telephones within Saudi Arabia. All personnel had to use a limited bank of telephones to make all calls.[69] Even though the initial forces in Saudi Arabia were under a single commander, his headquarters were not collocated with tactical units, which seriously hindered the initial command and control efforts. The ability to plan for ground operations resided with the initial ground units in the vicinity of Dhahran. CENTCOM headquarters in Riyadh provided only limited support to these forward units. A system of liaison officers between units did not exist during this time, which prevented detailed integration between the various joint components. The result was multiple stovepiped planning efforts that were not fully synchronized.

During the initial weeks of DESERT SHIELD, Coalition forces had to be able to counter Iraqi ground force capabilities. The initial joint force had limited capability to defend against this threat. A lack of Air Force command and control hindered its ability to provide counterland capabilities to the joint force. The Air Force did not deploy the necessary command and control assets to conduct tactical air strikes in close proximity to Coalition forces. It was three weeks into DESERT SHIELD before the Air Support Operations Center (ASOC) arrived into theater. Until that time, the ground forces did not have a mechanism to request the JFACC for air support assets.[70] Air Liaison Officers (ALO) and the ground-based tactical controllers did not deploy with

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[68] Murray, *Air Power in the Persian Gulf*, 13.

[69] *Conduct of the Persian Gulf War: Final Report to Congress*, 36.

[70] RAND, *Project Air Force Assessment*, 10.

the initial Army units.[71] Without these personnel, there was not an ability to safely and accurately control necessary airstrikes. Air Force aircrews did not have the necessary awareness on the various fire control measures to prevent fratricide during close air support missions.[72]

During this initial stage of DESERT SHIELD, the Air Force command and control structure had gaps that reduced the effectiveness of the service's contributions to the joint force. Organizations critical to a potential defensive scenario arrived later in the operation. Because the TACC was established late in this period of time, the limited Air Force assets could not be centrally commanded and directed to a critical location. Joint planning systems did not mature until later in DESERT SHIELD when technical and collaborative challenges were overcome. Tactical command and control entities such at the ASOC, along with its associated liaison officers and tactical controllers, did not initially deploy which increased the risk of fratricide to the joint force. The limitations of Air Force command and control prevented effective support of the limited Coalition ground forces and increased risk for defeat in the face of an Iraqi invasion.

Intelligence

In order to gain air superiority, the Air Force's initial intelligence capabilities focused on observing the Iraqi air defense system. On the first day of DESERT SHIELD, E-3 airborne early warning aircraft landed in Riyadh. During the first two weeks, a total of five early warning and electronic intelligence (ELINT) aircraft arrived into theater. The airborne early warning aircraft were able to detect Iraqi aircraft, while the ELINT aircraft collected intelligence on Iraqi air defense systems.[73] These aircraft collected intelligence about the air domain, but did not assist in

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[71] James Winnefeld, Preston Niblack, and Dana J. Johnson, *A League of Airmen*, (Santa Monica, CA: RAND, 1994), 54.

[72] Ibid., 53.

[73] *Conduct of the Persian Gulf War: Final Report to Congress*, 36.

the ground force awareness of Iraqi ground movement. It was not until much later that aircraft arrived in theater and provided intelligence on enemy ground force movements.

Even if there was intelligence useful to land forces, there was not a process to quickly share information between components. Instead, ground forces relied on host-nation and organic scout units to detect a potential Iraqi advance. Without effective tactical and operational intelligence, the initial response force was vulnerable to a surprise Iraqi attack. Communication limitations hindered the ability to share information from national intelligence assets like satellites with theater planners. Information provided to national leadership was not readily available to units in the CENTCOM AOR. This lack of intelligence hindered the joint force's ability to respond to an enemy attack. CENTCOM's joint command and control did not have the information it needed to make appropriate decisions to direct and integrate the joint force to defend against an Iraqi attack.

Movement and Maneuver

The Air Force's greatest contribution to this function was the operational and strategic movement of forces into theater.[74] The ability to rapidly move the initial air and land forces into theater created an element of deterrence.[75] Upon its arrival, the Army moved into a static defensive position with minimal requirements to move further. Even if there were requirements for these forces to move, the Air Force had limited intratheater aircraft available for the Army to use, but it was sufficient to meet the requirements at that time.

As part of the air component, Air Force's ability to maneuver within Saudi Arabia was directly related to the number of combat aircraft that were in the theater. The Air Force rapidly

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[74] Winnefeld, *A League of Airmen*, 260.

[75] Douglas Macgregor, *Breaking the Phalanx* (Westport, CT: Praeger, 1997), 225.

built up its combat aircraft units.[76] Air refueling aircraft were among the first aircraft in Saudi Arabia, which enabled the quick arrival of Air Force fighter aircraft in Saudi Arabia.[77] These refueling aircraft extended the Air Force's operational reach and sortie duration, which would have been needed if Iraq invaded Saudi Arabia.

Fires

The Air Force fires capability was limited during the initial weeks of DESERT SHIELD. The initial aircraft to arrive in Saudi Arabia were air-to-air aircraft.[78] Based on the Iraqi Air Force's aircraft and mission capability, these assets would have been able to gain localized air superiority in the vicinity of the Coalition ground force. These aircraft lacked the ability to provide counterland fires to defend against the counter 5100 Iraqi armored vehicles that were in Kuwait.

By the seventh day of the deployment, three squadrons of attack aircraft had arrived. Even though they had arrived, these aircraft lacked adequate munitions supply to effectively counter an Iraqi armored attack.[79] As previously discussed, the Air Force's ability to provide supporting fires to the Coalition ground forces were degraded by inadequate command and control systems. Without the ASOC and ALOs, the coordination between the air and land components was not effective. Air Force attack aircraft and Army artillery were not integrated, which hindered the effect of air support of Coalition troops.

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[76] Winnefeld, *A League of Airmen* , 53.

[77] *Conduct of the Persian Gulf War: Final Report to Congress,* 36.

[78] Murray, *Air Power in the Persian Gulf*, 11.

[79] RAND, *Project Air Force Assessment*, 9.

Protection

The joint force and host nation combined to protect the initial response force. With the support of airborne early warning aircraft, Air Force fighter aircraft protected the joint force from enemy air attacks. Ten days into the deployment, the Army added an additional layer of air defense protection when it deployed Patriot air defense systems to critical locations. While the Patriot batteries were Army assets, they assisted the joint air component in the protection of the Coalition force from Iraqi air and missile attacks. These systems had the ability to detect an incoming attack, but the inadequate command and control systems during this period did not permit the warning to be passed quickly enough to the Coalition forces to minimize the effects of an attack.[80]

Sustainment

Along with command and control, sustainment issues had the most adverse impact on the Air Force's contribution to the joint force during DESERT SHIELD. Initial sustainment for the entire joint force in Desert Shield was inadequate. Because of CENTCOM's prioritization of deploying combat forces to Saudi Arabia, logistics personnel and equipment arrived later in the operation.[81] The original deployment plan was modified to send combat units at times when logistics personnel were scheduled to deploy. [82] As a result, ground forces had to unload their equipment from transport ships and aircraft, which resulted in significant damage.[83]

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[80] Gary Guertner, "Deterrence and Conventional Military Forces," *Deterrence in the 21st Century*, ed. Max Manwaring (Portland, OR: Frank Cass, 2001), 8.

[81] Michael Gordon and Bernard Trainor, *The Generals' War* (Boston, MA: Little, Brown and Company, 1995), 61.

[82] *Conduct of the Persian Gulf War: Final Report to Congress*, 34.

[83] Gordon, *The Generals' War*, 61.

Army and Air Force units reached critically low levels of food and water shortly after their arrival.[84] Some units were down to a 24-hours supply for their personnel.[85] Air Force units lacked necessary maintenance equipment and munitions, these units were nearly combat ineffective due to a lack of food, water, and ammunition. [86] Although Air Force combat aircraft were in the area of operations, sustainment shortages degraded their effectiveness to deny Iraq its potential objectives.

Without sufficient sustainment capabilities, the joint force as a whole was less effective during DESERT SHEILD. Air Force units could not perform the tasks needed to counter an Iraqi invasion, and did not have the necessary food and water to conduct critical operations for the joint force. These units could not employ all of their equipment because of maintenance limitations. Even with these problems resolved, the lack of important counterland munitions made the defense against the Iraqi army less likely to succeed.

Case Study Conclusion

During the initial weeks of DESERT SHIELD, the Air Force could not make a fully effective contribution to the overall joint force. It did not possess the necessary command and control capabilities to effectively integrate with Coalition ground forces. Without this integration, the Air Force would not help the Army overcome its own capability shortfalls. The Air Force's intelligence capabilities would have assisted in achieving air superiority, but did not enhance the joint force's overall awareness. The coalition ground force remained vulnerable to potential Iraqi ground attack. Inadequate sustainment nearly rendered Coalition forces ineffective.[87] These

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[84] Dominic Caraccilo, *The Ready Brigade of the 82nd Airborne in Desert Story: A Combat Memoir by the Headquarters Company Commander* (Jefferson, NC: McFarland, 1992), 28.

[85] Murray, *Air Power in the Persian Gulf*, 15.

[86] Ibid., 14.

[87] Ibid.

forces lacked the essential services to support defensive operations. CENTCOM's priority of deploying combat forces overlooked the importance of support functions.

The speed that these forces arrived into theater presented a strong political message that may have contributed to the deterrence of Iraqi leadership. This deterrence was not due to the capabilities of the joint force. The lack of joint integration and combat support functions prevented this force from being able to prevent Iraq from achieving its objectives. Without the ability to deny those objective means that this initial response force was otherwise not a credible deterrent force.

The Development of the Air Expeditionary Force

Cold War Drawdown

With the collapse of the Soviet Union, American military planners no longer had a single threat on which to orient its strategic planning. The United States began its transition to the post-Cold War era with a "bottom-up review" led by the Chairman of the Joint Chiefs of Staff, General Colin Powell. This review helped facilitate the impending military drawdown that was anticipated with the end of the Cold War and the victory over Iraq.[88] General Powell assessed that the post-Cold War environment would contain multiple regional threats to the United States' national interests.[89] Unlike in the Cold War, these regional threats were each unique enough that no single threat model could be relied on for strategic planning. Future planning for the United States military would be based on countering enemy capabilities instead of a specific threat nation.[90]

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[88] Peter Nelson, "Securing Land Victory in the Twenty-First Century," (Master's Thesis, U.S. Army War College, 2007), 6.

[89] Eric Larson, "U.S. Reform in a Decade of Change" *Post-Cold War Defense Reform* ed. Istvan Gyarmati and Theodor Winkler (Washington, DC: Brassey's, 2002), 248.

[90] Ibid.

General Powell established the "bottom-up review" to determine the capabilities possessed by likely regional threats and cross-assessed American force capabilities to counter them. The end state was to have a United States military that was smaller than that of the Cold War, but still possessed sufficient capabilities to protect American interests. This review provided the basis for the military force reduction that helped to achieve the desired peace dividend. As a result of this drawdown, the Air Force reduced its personnel strength by 36% from its 1989 level.[91] It also went from having thirty-six tactical fighter wings to twenty.[92] Without the threat of a Soviet invasion, the United States did not need to continue to forward base as much of its force.

In order to have forces positioned that could respond rapidly to crises, the Air Force had forty bases located outside the United States as of 1989.[93] After the Cold War as there was no longer a strong imperative to forward base Air Force tactical aircraft.[94] The Air Force reduced its number of foreign bases to sixteen as the post-Cold War Air Force became smaller and more stateside based. [95] When responding to future crises, the Air Force had fewer assets to employ and travelled greater distances to a crisis location. This transformation took years to accomplish, but in the meantime, new security challenges continued to emerge. The Air Force underwent this transformation while remaining continuously engaged in combat action.

In the years following the end of the Cold War and the Coalition's success in DESERT STORM, the United States was engaged militarily in multiple locations. For its part, the Air Force flew combat missions to enforce two no-fly zones over Iraq and patrolled the skies over the Former Republic of Yugoslavia (FRY). It also provided military support to counter-drug

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[91] Paul Curlett, *Incorporating Joint Forces Into the Air Force Aerospace Expeditionary Force*, Carlisle Barracks, PA: U.S. Army War College, 2002, 2.

[92] Davis, *Anatomy of Reform*, 13.

[93] Ibid.

[94] Ibid., 14.

[95] Ibid.

operations in Central and South America. In 1998, the Air Force flew 27,000 sorties in the Iraq no-fly zones, 2,000 sorties over Bosnia, and conducted sixty counterdrug deployments.[96] New challenges requiring rapid response by the Air Force continued to emerge.

The Air Expeditionary Force

The AEF concept initially started as a method to meet the combatant command's critical needs. It was not originally intended to be a cyclical force generation process. In 1995, CENTCOM unexpectedly lost the use of an aircraft carrier supporting the southern no-fly zone over Iraq and needed to fill its shortfall. The Air Force quickly built a force to deploy to the CENTCOM AOR to meet this requirement. The goal was for this first AEF to deploy within twenty-four hours and fly combat missions within forty-eight hours.[97] Units were identified and deployed. They met the time goals but only after overcoming many issues to prepare personnel and equipment. The AEF was used again over the next four years to meet combatant commands' urgent requirements, to include humanitarian relief efforts. While the AEF proved useful in meeting those requirements, it lacked the processes to better prepare the force for deployment. During this same time, the Air Force examined how it met the on-going requirements while sustaining its inventory of service-life limited items such as aircraft. This problem was largely created because the Air Force continued to utilize its Cold War methodology by resourcing a combatant command's requirements with that command's assets.

The on-going operations over Iraq and the FRY magnified this problem. European Command (EUCOM) was responsible for the air operations over the FRY and northern no-fly zone over Iraq. The Air Force primarily used the eight fighter squadrons based in Europe to

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[96] Ibid., 19.

[97] Larry Thompson, *The Quick Response Air Force: Decisive Expeditionary Airpower for the Future?* (Maxwell Air Force Base, AL: Air University Press, 1996), 23.

support these operations along with EUCOM's other operational requirements. At the same time, CENTCOM was responsible for the southern no-fly zone over Iraq. While CENTCOM did not have any permanently assigned Air Force combat units, CENTAF had units as part of its dual-hatted stateside organization, Ninth Air Force. Ninth Air Force had provided much of the United States Air Force's initial response to DESERT SHIELD and continuously had squadrons and personnel deployed to patrol southern Iraq. CENTCOM and EUCOM repeatedly used their own assets for contingency operations, while identical assets assigned to less engaged commands did not have the same operations tempo. By doing this, the Air Force created a risk that some of its inventory of assets would be overused.[98]

Some Air Force equipment, like aircraft, has a limited service life. Reaching those limits result in either retiring an asset from use or require extensive maintenance to keep them updated and operable. Many of the Air Force capabilities are a product of this specialized equipment. The development, manufacturing, and acquisition of this equipment take significant amounts of time.[99] To the Air Force, a loss of equipment directly relates to a loss of some capability. In order to remain effective at its tasks, the Air Force must incorporate elements of efficiency in its processes. The Air Force's smaller post-Cold War inventory must be closely managed while still meeting the combatant commands' requirements. By using its Cold War approach to meet these continuous requirements, the Air Force risked losing a portion of its overall capability. The Air Force needed a better way utilize its limited assets so that the maximum amount of equipment and capabilities would be available for longer. The AEF provided a structure to better plan force utilization.

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[98] John P. Jumper, "Global Strike Task Force: A Transforming Concept Forged by Experience," *Aerospace Power Journal* (Spring 2001): 25.

[99] Raymond Pyles, *Aging Aircraft: USAF Workload and Material Consumption Life Cycle Patterns* (Santa Monica, CA: RAND, 2003), 2.

In 1998, the Air Force began to transform its AEF process. It no longer would be used to only meet an immediate crisis response. The AEF process became a mechanism to manage and schedule forces for expeditionary use.[100] It better managed the Air Force's limited inventory of combat assets by making all Air Force assets available for deployment taskings, regardless of their relationship to the combatant commands. The AEF also gave better predictability to prepare Airmen for deployment periods. The AEF process divided the Air Force into ten packages, each with nearly identical capabilities. These packages were available for deployment on a rotational basis for four-month windows. Outside of their deployment windows, the packages would accomplish training requirements to prepare for their next deployment cycle.

The AEF packages consisted of various operational units, but possessed nearly identical capabilities. Each AEF package had the ability to perform tasks across the full spectrum of military operations.[101] Each AEF period had approximately 150-175 aircraft and 15,000 Airmen that were available to be deployed.[102] When a crisis arose, a combatant command submitted its request for capabilities. From the assets available in the AEF package, the Air Force tailored an Air Expeditionary Task Force (AETF) to meet the combatant command's requirements.[103]

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[100] *AFDD 1: Air Force Basic Doctrine*, 61.

[101] Larry Thompson, *The Quick Response Air Force: Decisive Expeditionary Airpower for the Future?* (Maxwell Air Force Base, AL: Air University Press, 1996), 23.

[102] John Pike, "Aerospace Expeditionary Force," Global Security.org, http://www.globalsecurity.org/military/agency/usaf/aef-intro.htm (accessed December 14, 2010).

[103] Davis, *Anatomy of Reform*, 30.

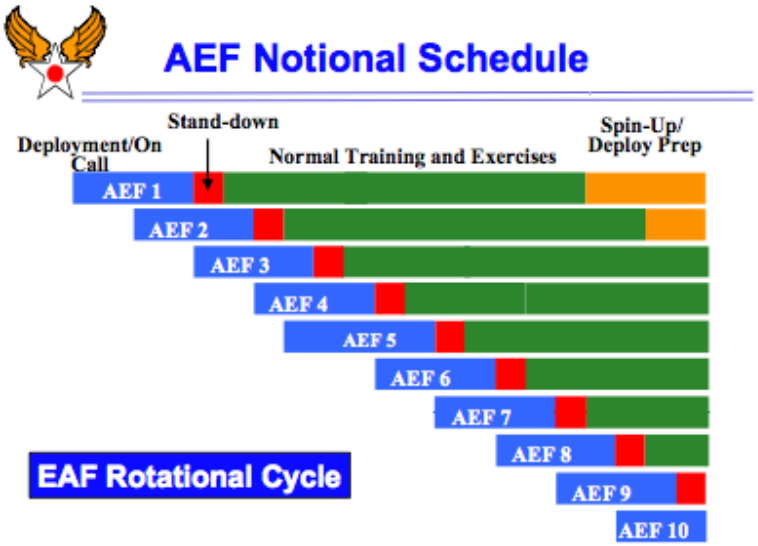

Figure 2: Notional AEF Rotational Cycle Depiction[104]

Since there were fewer forward based forces, it was assumed that future operations would occur away from established military infrastructures.[105] The Air Force designed each AEF package to support operations in austere locations. During the Cold War era, the Air Force anticipated operating from established bases. As demonstrated during DESERT SHIELD, there was a need for personnel to provide combat support at newly established bases. The Air Force assigned personnel to the AEF packages to provide this combat support. The Air Force's challenge was to support contingency operations while still operating its permanent bases.

These permanent Air Force bases had to perform their peacetime missions while training for future deployments. While not deployed, Air Force support personnel performed similar tasks for their home base. In order to minimize the impact on home station operations, the Air Force

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[104] Table extracted from briefing by General Michael E. Ryan, Air Force Chief of Staff, April 2, 1999. The term "EAF" on the chart means "Expeditionary Air Force." This was a concept that was proposed to create the organizational mindset that the Air Force will need to be prepared to operate from bases that are austere and have less that full operational capability. The concept still exists within the Air Force culture even though the term is not used in Air Force doctrine.

[105] Michael Nelson, "Aerospace Forces and Power Projection," *The Future of Air Power in the Aftermath of the Gulf War*, ed. by Richard Shultz and Robert Pfaltzgraff (Maxwell Air Force Base, Alabama: 1998), 123.

assigned support personnel to AEF packages as individuals instead of as entire units. This meant that a permanent base only loss a few individuals each deployment instead of entire support units. Permanent bases continued operations with only minor degradation while the Air Force provided critical support at deployed locations.

The AEF process enabled the Air Force to better respond to the challenges it faced following the Cold War. It helped the Air Force to utilize its limited inventory of assets while meeting the combatant command's increasing requirements. The AEF process organized the Air Force to generate forces in a rapid response to the combatant commands' requirements. The AEF packages were arrayed to facilitate meeting these requirements and provide a wide range of capabilities.

AEF Integration into a Crisis Response Force

Consider AEF integration in a hypothetical conflict: a regional aggressor with significant conventional combat capability threatened an American ally. The ally requested American support to protect its sovereignty, and the United States agreed to provide the requested support. Upon direction from senior national leadership, the GCC requested forces from the services to be deployed immediately to the region. With this request, the GCC provided a list of capabilities that must be performed by the services for this operation. To meet the GCC's requirements, the Air Force provided forces that can gain air superiority, detect enemy force movements, and employ precision-guided munitions (PGM). Implied in these capabilities is the ability to provide command and control as well as sustainment for those assets. From the forces available for deployment, the Air Force created an AETF with the following assets and capabilities:

- 12x F-22 (air superiority)
- 12x F-16CJ (SEAD, air-to-ground, PGM, air superiority)
- 12x F-15E (air-to-ground, PGM, air superiority)
- 3x E-3 (airborne surveillance and early warning)

- 3x E-8 (air-to-ground surveillance)

- 2x RC-135 (electronic surveillance)

- 8x KC-135 (air refueling)

The Air Force also included various ISR and airlift platforms available as part of this AETF. To support this AETF, the AOC aligned with the GCC, provided command and control for the Air Force service component (AFFOR) and potentially the joint air component. The AETF was the Air Force's contribution to the Joint Task Force (JTF) responding to this crisis. It integrated with the other service's contribution to the joint air component. The capabilities of this AETF are examined in terms of the doctrinal joint functions.

Command and Control

This initial response force's command and control capability was enhanced by the combatant command's AOC. Each combatant command had an AOC that had the ability to control the entire theater or support a JTF's operation. AOCs possessed the ability to communicate with the entire joint force. Unlike in DESERT SHIELD, AOCs were established organizations with an existing staff. This AOC had a full complement of liaisons from each of the services to assist with joint planning. These liaison elements included a Battlefield Coordination Detachment (BCD) that conveyed the Army's inputs to the Air Tasking Order.[106]

Since DESERT SHIELD, the Air Force aligned Air Support Operations Squadrons (ASOS) with each Army division. These units were not part of the AEF process and deployed alongside their aligned Army unit. These squadrons contained the ALOs and TACPs needed to request and coordinate air support for the ground units. Air support requests were relayed through the ASOC, which was aligned with the Army's senior echelon headquarters. The ASOC conveys

[106] U.S. Department of Defense, *Joint Publication 3-30: Command and Control for Joint Air Operations* (Suffolk, VA: U.S. Joint Forces Command, 2010), II-10.

the Army's priority of effort to the air component so that air assets were directed to where they were most needed.[107] Like the AOC, ASOCs had advanced communication capabilities to better control air support aircraft. They enabled the air component's ability to provide air support for ground forces, which proved critical during a potential defensive operation.

The evolution of the Air Force command and control improved the Air Force's capabilities, which were critical in the early stages of a crisis.[108] The command and control helped the Air Force, as well as the joint air component, to accomplish its assigned tasks. Even though the AOC, ASOC, and ASOSs are not managed as part of the AEF process, they enhanced the joint force's overall capability. The improvement and integration of these command and control nodes into the joint force since DESERT SHIELD are the results of organizational and doctrinal improvements. Their success cannot be attributed to the AEF process.

Intelligence

In this scenario many intelligence aircraft were the same as those flown during DESERT SHIELD. The Air Force improved their collection capabilities by adding advanced sensors. New platforms such as remotely piloted aircraft provided additional intelligence support for an area of operations.[109] While all of these platforms were useful in conflicts in Afghanistan and Iraq, they have limited capability in a conventional conflict against a military with a capable air defense system.

The revolution of intelligence came in the ability to share information with the joint force.[110] As discussed previously, information about the operating environment can be shared

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[107] Ibid., I-11.

[108] *Conduct of the Persian Gulf War: Final Report to Congress*, 35.

[109] Brian Dunn, *The First Gulf War and the Army's Future* (Arlington, VA: Institute of Land Warfare, 1997), 15.

[110] Ibid.

rapidly with the entire joint force through computer networks, datalinks, or voice transmissions. Data collected by ground surveillance aircraft like the E-8 Joint STARS was shared rapidly with Army ground units. While there have been some modifications in intelligence collection methods, the ability to share information enhanced a joint force's ability to decide and act. Current network capabilities allow the air component's leadership to receive intelligence and information rapidly in order to make timely decisions that direct the application of airpower. The AOC's communication capability enables it to redirect aircraft instantaneously to provide support as needed within the area of operations.

Air Force intelligence platforms are deemed "low-density/high-demand." This refers to the fact that requests for some intelligence capabilities often exceed the quantity of platforms that can provide those capabilities. While there are a relatively few of these specific aircraft, like the E-8 and RC-135, the AEF process ensures their associated aircrew and support personnel are prepared for a rapid deployment. As with the command and control function, many advanced intelligence capabilities are the result of technological improvements in intelligence collection and distribution. The resulting improvement in capabilities is also not attributable to the AEF process.

Movement and Maneuver

The aircraft provided in this AEF are mostly the same as were used in DESERT SHIELD. Improvements to aircraft systems expanded their capabilities, but did not alter the fundamentals of air employment. The methods used in DESERT SHIELD largely hold true today. The AEF process helped prepare units for deployment so that they could move quickly to a crisis location, which improved the Air Force's overall response time to a crisis. The air component's airlift assets assisted in the rapid deployment of ground forces to advantageous locations. As was the case in DESERT STORM, the air component continued to have the ability to support the land component's scheme of maneuver, while gaining a position of advantage in the air domain. Other

than simplifying the force allocation process, the AEF process did not improve air movement and maneuver.

Fires

As with the previous functions, the AEF process improved the fires joint function by ensuring that attack aircraft were available to quickly deploy. Since DESERT SHIELD, improvements in fires deployment are largely a result of technological improvements and habitual relationships. Except for the F-22, this force package included the same types of aircraft that were used in DESERT SHIELD. Twenty years later, these aircraft were modified to improve their fires capabilities.

In 1990, these aircraft were largely unable to employ PGMs. Aircrews had to expend multiple bombs to strike a single target. Currently, all of these aircraft have improved navigation capabilities and employ PGMs, to include laser- and GPS-guided weapons. This capability allows them to destroy targets, often with just a single bomb. Precision munitions redefined the concept of mass for airpower.[111] Today, a four-ship of aircraft with PGMs takes between nine and forty non-PGM aircraft.[112]

In addition to improved aircraft technology, fires employment has been enhanced by the improved relationships between the Army and the Air Force. The Air Force additional personnel and equipment enhance the capabilities of the Tactical Air Control System (TACS). The ASOSs aligned with Army divisions and corps have communications capabilities to be in direct contact

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[111] Phillip Meilinger, *10 Propositions Regarding Air Power* (Maxwell AFB, AL: Air Force History and Museums Program, 1995), 41.

[112] A four-ship of F-15Es can carry up to 36 laser-guided bombs or 80 small-diameter bombs (a GPS-guided munition). Depending on the target composition, one to two bombs are expended per target attack. An F-15E without PGMs would normally be able to attack two targets in a sortie. This increase in weapon accuracy creates the equivalent aircraft capability discussed.

with the AOC to request air support.[113] This helps to provide firepower that may be critical in a defensive situation similar to DESERT SHIELD.

The technological improvements were driven by other segments of the Air Force and the joint community. While these aspects enhanced the Air Force's contributions to the fires joint function, they were not attributable to the AEF process. The AEF process simply managed the deployment cycles of these capabilities. As stated before, Air Force ASOSs enhanced the Air Force's ability to provide fires but the AEF process does not govern these units. Compared to DESERT SHIELD, the AEF ensured attack aircraft, aircrews, and support personnel were available for deployment sooner.

Protection

The Air Force's improved command and control system, as previously discussed, gave the ability to better coordinate the air component's contributions to the protection of the joint force. Liaisons within the Air Force's command and control system helped the synchronization of joint force protection. The AEF process provided necessary security forces personnel with each force package. While security forces personnel deployed in DESERT SHIELD, the AEF process ensured that security forces personnel were prepared to immediately deploy. These Airmen enhanced the security of the joint force but only at Air Force operating locations. Improved air defense capabilities of the F-22, and other multi-role fighters, was the result of technological advances, not the AEF process. The ability to network Army Patriot defense systems with the air component command and control was another result of technological and organizational improvements. Similar to the fires joint function, the AEF process prepared personnel and equipment that contributed to joint force protection for deployment. The deployment of these capabilities must be incorporated into the joint force's deployment plan in order to be effective in

[113] *JP 3-30: Command and Control for Joint Air Operations*, II-11.

theater. Other improvements that are a result of technological advances cannot be attributed to the AEF process.

Sustainment

The AEF process enhanced the force sustainment by preparing Airmen for deployments. They mobilized and deployed quickly so limited transportation assets could be used elsewhere in the joint force. Air Force aerial port and logistics personnel deployed to an AOR as part of the AEF force packages. These Airmen created an efficient logistical support system that enabled the deployment and sustainment of the entire joint force.

The AEF process prepared personnel in other crucial support positions, such as contracting, for prompt deployment. These personnel prevented food and water shortages at combat units by contracting with the host-nation for support. Sustainment experts enhanced the joint force's fires capabilities by ensuring combat units have the necessary ammunition. By doing this, Air Force and other services' could be more capable of defending against an attack and denying the adversary its objectives, unlike in DESERT SHIELD. The AEF process ensured that sustainment personnel are prepared for immediate deployment. As with the protection joint function, personnel responsible for the sustainment and logistical support of the joint force must be deployed in a timely manner to the crisis region.

Assessment of AEF Process Contributions

In terms of joint functions, the AEF process is only slightly responsible for improving the Air Force's contributions to the joint force as compared to DESERT SHIELD. Most of the service's improvements are a result of changes in doctrine and improvements in technology. While these improvements are significant to the joint force, they are not attributable to the AEF process. The AEF process assists the Air Force with preparing personnel, equipment and capabilities for rapid deployment. That being said, this improvement can be easily negated if

senior military leaders were to exclude some capabilities in favor of another priority, such as combat forces. If that was to occur, the same vulnerabilities seen during DESERT SHIELD would occur again.

The real value of the AEF process lies outside of improving joint function contributions. As shown in DESERT SHIELD, the ability to rapidly deploy forces to a region sends a strong political message that can contribute to the potential deterrence of an aggressor. Combining this prompt response with improved technology and command relationships may cause an aggressor to delay while it assesses the situation to gain better understanding. If the aggressor delays long enough, for whatever reason, it may forfeit the operational initiative in a crisis. It is this opportunity that the American joint force seeks in a conflict so it can better pursue its objectives.

Conclusions

The military drawdown following the Cold War combined with continuous combat operations since 1991 eventually drove the Air Force to change its approach to force generation. The Air Force would not have units based near potential crisis locations. With fewer assets available, the Air Force could not continue to meet a GCC's requirements solely with resources that were organic to that theater. Airmen and equipment throughout the service needed to be centrally managed so they could be used in a more balanced manner. This allowed units to reconstitute, retrain, and reequip so that they could be available for future taskings.

DESERT SHIELD demonstrated how the Air Force deployed its forces in response to a crisis without the AEF process. Units deployed in the order that they were able to depart. Planners did not give consideration for the order that capabilities should flow into theater. The joint force did not have the necessary capabilities to deny Iraq from achieving its objectives if it would have invaded. There were gaps in the Air Force's contributions to the joint functions that increased the vulnerability of the initial response force.

Many of the joint force's vulnerabilities in DESERT STORM would not exist if a similar scenario occurred today. Doctrinal and technological improvements resolved most of those previous issues. A result of lessons learned from DESERT STORM, the joint force has improved command and control as well as intelligence functions that would better integrate the joint force. Technology and force integration have increased the lethality of various systems, giving them fires capabilities previously had by larger units. When combined with improved sustainment practices, an initial response force would be able to deny an adversary its objectives earlier in an operation. While these improvements are critical to future success, they occurred in isolation from the AEF process.

The continued value of the AEF process is that it ensures that these capabilities are prepared for deployment to a crisis location. By having a continual supply of forces prepared to deploy, planners have the ability to flow capabilities into a theater in a sequence that is beneficial the joint force. The inclusion of critical support functions in AEF packages provides senior commanders an opportunity to balance the deployment of combat forces with support units. If this balance is achieved, it will alleviate some of the DESERT SHIELD vulnerabilities.

The wars in Afghanistan and Iraq have caused some modifications to the original AEF process, but it remains a viable force generation method. As the joint force becomes more resource constrained, interdependencies between services will increase. As this happens, the services must manage their limited assets to maximize their future capabilities that benefit the entire joint force. The AEF process distributes the burden of continuous operations across the entire Air Force. This approach extends the longevity of limited assets, keeping them available for service longer. As equipment becomes older, it requires upgrades, inspections and repairs to remain mission capable. The AEF process provides important reconstitution time to accomplish these tasks.

In this era of persistent conflict, the AEF process also provides a degree of predictability for Airmen while they are not deployed. This improves the quality of life for Airmen and their

families. It also provides to necessary time for Airmen to prepare for their full spectrum of possible tasks during their next deployment cycle. The Air Force's current shortfalls are frequently the result of not having enough resources to meet the requirements, as shown in some high-demand/low-density capabilities that include many support functions. The Air Force now provides different AEF timelines for personnel and equipment in this category in order to preserve the ability provide important capabilities and reconstitute.

The AEF process has engrained expeditionary operations in the Air Force psyche. The service continues to be focused on deploying its critical capabilities rapidly. This expeditionary mindset combined with the Air Force's improvements to systems and doctrine contributes to the joint force's ability to deter an adversary from threatening our national interests. The United States' next threat can come from anywhere and it is the job of the military to be prepared yet flexible. The Air Force should continue using the AEF process to ensure that its continuously improving capabilities are prepared to deploy as part of a joint force.

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